

focus on *Fish & Wildlife*

The hidden danger beneath your feet

You might be hiking, hunting, fishing or skating on thin ice



When choosing a location to fish this winter, remember slush ice is about half as strong as clear blue ice. New ice is stronger than old ice and river ice is 15 percent weaker than lake ice.

Every winter, thousands of Hoosiers enjoy hunting, fishing, skating, hiking or just sliding around on frozen ponds and lakes. And every year, a few people drown after falling through ice.

Ice in central and southern Indiana can be the most dangerous because the air temperature can fluctuate rapidly between a deep freeze and above freezing.

It's bad enough that the roads we drive just to get to a hunting or fishing spot can be covered in places with patchy ice. Hills, lakes and streams can pose the same danger after we reach our destination. It can be hard to tell what's safe.

Hunting or hiking in the winter can be tricky. Walking on north-facing slopes can be especially treacherous. North-facing slopes don't receive as much sunlight and frozen ground is common — even when the slopes to the east, west and south on the same hill are thawed. Be careful about parking your vehicle on frozen ground on a sunny morning, as you may find yourself stuck in thawed soft mud in the afternoon.

Streams can be dangerous, too. Where sunlight falls on the ice for little or no time during the day the ice may hold your weight. However, on the east, west and south areas, sunlight may weaken the ice.

Always take a fully charged cell phone with you as cold weather puts a strain on the battery. Put the phone on vibrate so you don't scare off wildlife or disturb others. Put your cell phone in a zip lock bag and keep it in a

shirt or coat that has a button or Velcro on the pocket so you can get to it easily. A zippered pocket could jam or freeze shut. A gallon-size baggie can be used as an emergency flotation device.

Make sure you warn your children about playing on ice-covered retention ponds, lakes or streams without adult supervision. Tell them if they see someone — even an animal

break through the ice, to go get an adult.

If you see someone go through the ice, don't run out on the ice. You too may end up in the freezing water. You need something to reach out to the victim — a tree branch, pole, ladder, or rope can help.

Many ice anglers wear a life jacket for extra warmth and safety. The life jacket won't get you out, but it will keep you afloat. Many anglers take along gutter spikes or nails to grip the ice and pull themselves out. If you're fishing near the shore, secure a rope around a tree or big rock and tie the other end of the rope around your waist. It will make it easier to pull yourself up and out of the hole if you break through the ice.

Michael Ellis, program director, Division of Fish and Wildlife

Topics this issue...

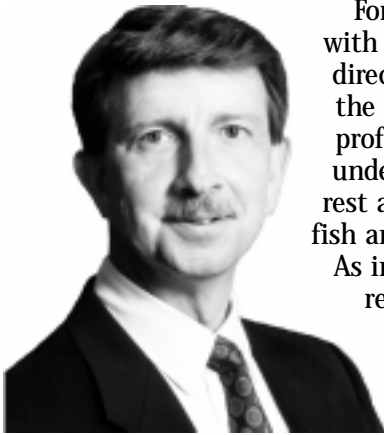
Fantastic fencerows

Smallmouth bass

Fish parasites

Director of *Fish & Wildlife*

Filling in—thoughts from the acting director of Fish & Wildlife



For the past eight years, Gary Doxtater served with distinction as Indiana's fish and wildlife director. All of us owe him a debt of gratitude for the legacy of lands, enhanced resources and professional management that Indiana achieved under his leadership. Gary retired this fall but rest assured he will remain an active advocate for fish and wildlife resources.

As interim director, I've had the privilege of representing the division's skilled and dedicated employees and the programs they administer since Gary stepped down in July. It has been a challenging experience, given world events since Sept. 11, and the need to tighten state budgets and plan

necessary spending with extreme care. In spite of these unprecedented challenges, Indiana's fish and wildlife biologists and their support staff continue to get the job done. That's a tribute to the extraordinary commitment and clear sense of purpose that these workers have. They are working hard for you and the resources you use and enjoy. They deserve your ongoing support.

No one likes to see fees go up, but after 14 years of flat license fees, it was absolutely necessary to raise Indiana's hunting and fishing license fees, effective Jan. 1, 2002. We appreciate the understanding and support of the vast majority of Indiana's sportsmen and women who recognize the need to adequately fund fish and wildlife management and law enforcement.

Two years ago, five million fish died in a three county, 50-mile stretch of the West Fork of the White River from Anderson to Indianapolis. This massive kill was traced to the Guide Corporation in Anderson. Several months ago, the state and federal lawsuits were settled with a payment of nearly \$14 million by Guide Corp. Of this amount, \$6 million was placed in a White River restoration trust fund that will be used to improve water quality, protect riverbanks, develop wildlife habitat and improve public recreational access to the river. A 10-member Citizen's Advisory Council has been formed to advise the state on these projects. On-the-ground improvements will get underway in the coming months. To date, nearly 700,000 fish have been restocked as part of the restoration efforts. Many of these fish were purchased from private hatcheries with funds raised by White River Rescue 2000, a nonprofit group formed in the wake of the fish kill.

Addressing the state's fiscal situation impacts us all in one way or another. One of those impacts is we will not be able to print and mail out *Focus on Fish and Wildlife* to our current list of 54,000 subscribers in the future. However, we will work to keep information flowing to you through other means including our website at www.wildlife.IN.gov.

Bill James,
Acting Director
Division of Fish and Wildlife

Mission

To manage fish and
wildlife for present
and future
generations,
balancing ecological, recreational and
economic benefits.



This is the final issue of *Focus on Fish & Wildlife* from the Indiana Department of Natural Resources Division of Fish and Wildlife. *Focus* has been published since 1985 and sought to educate sportsmen and women, conservationists, wildlife recreationists and all Hoosiers on topics related to the management of Indiana's fish and wildlife resources.

Larry D. Macklin

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focus on
Fantastic field fencerows

A highway of life for Hoosier wildlife

During the past twenty years, field fencerows in Indiana have declined. In many areas, the decline has contributed to a decrease in small game populations, especially rabbit and quail. Many other wildlife species also depend on these field-bordering thickets we call fencerows.

Unless you're a farmer or a hunter, you probably wouldn't think twice about fencerows. But fencerows are vital to wildlife. They provide food, cover, and the connection between habitat types. Besides benefiting wildlife, fencerows can reduce soil erosion and mitigate water quality-degrading nutrients and chemicals in field runoff.

Smart hunters know that fencerows draw game like moths to a flame. As

many hunters will tell you, they have zigged and zagged through a prime hunting area and never even kicked-up a quail, rabbit, squirrel or deer. But when they hunt along a fencerow it's always productive.

As a landowner, the simplest way to make or improve a fencerow is to stop mowing, grazing, or cultivating the strip next to the fence.

Plowing and heavy disking is a good way to help reduce grass competition and create a seedbed where seeds of shrubs and trees can be planted. However, if tall fescue is growing in the same area, a herbicide may need to be applied to reduce the competition of this aggressive grass.

For maximum value to wildlife, fencerows should be at least 20 feet wide and include a variety of vegetation types — grasses, shrubs, weeds, and even a few scattered trees. If the fencerow is bare or less than 20 feet wide, planting shrubs such as dogwood, wild cherry, grape, cedar and blackberries will improve the cover.

Try seeding areas adjacent to fencerows with wildlife-friendly legumes and grasses to attract ground-nesting wildlife.

If you plant tree seedlings, they should be mulched to conserve moisture and reduce grass



Fencerows provide wildlife cover and a source for food.

competition. Other native plants will be added “naturally” through bird droppings.

On farms with heavy grazing, a double-fence can be installed to protect the wildlife travel lane. Some farmers install an electric fence as an effective and inexpensive method for this purpose.

Fencerow management should also include girdling or felling trees four inches or more in diameter. This allows the fencerow to develop thick, shrubby growth.

Larger trees eventually overshadow and eliminate the shrubs and outer strips of thick herbaceous cover. If trees are girdled, they will eventually provide insect-foraging and cavity-nesting sites.

Felled tree tops and end branches can be used to construct brush piles. A 15-foot wide by 6-foot tall pile every 100 to 200 yards along the fencerow is sufficient. Use a tic-tac-toe construction pattern, placing the larger diameter branches on the bottom and smaller ones on the top.

If you prefer to leave larger trees standing, the fencerow width should be increased to 50 feet wide and the trees should be nut producers.

For more information about wildlife habitat, contact your district wildlife biologist.

Michael Ellis, program director, Division of Fish and Wildlife



Will Keaton and Ben Shadley hunt gamebirds along a Rush County fencerow.

focus on

The evolution of smallmouth bass

A stream-side sermon by an optimistic angler

If only we could recall animated films of heroic smallmouth bass instead of those featuring family-oriented white-tailed deer, the health of our rivers might be notably different. Or, if smallmouth bass sang like birds, or could be trained to take marshmallows from hand, it might cause us to give more thought to the deliberate harm we do them.

Biologists may be as much to blame as anyone else. We have misled those we serve by characterizing these fish as 'warm-water species.' To be certain, these fish live in comparatively warm water. But, we say this as if we intend to suggest that it is the temperature of our rivers that have shaped their life-histories, provided them their jobs and their way of life, and assured them the opportunity to live and reproduce. Not so. They may well be warm-water fishes, but they are first and foremost something much more than that.

The settlement of Indiana began in earnest around 200 years ago. Rivers formed the highways that provided the transport of people and products that became the Hoosier state. In his report of the Wabash River ecosystem, James Gammon offers this historical description from 1815 of our state's longest free-flowing river:

"The first rate lands lie on the Wabash all the way to the lakes on the most beautiful stream in my recollection—it is about 250 yards wide and preserves its width very nearly for 400 miles...It is a beautiful and valuable stream—the water generally perfectly clear and transparent—exhibiting a clean gravelly bottom—it abounds with fish of various kinds."

Our prized sportfish, the warm-water centrarchids, shaped, formed, and molded by natural selection, are first and foremost **clear-water** fishes. Like a knife drawn across a whetstone, the clear waters of their

evolutionary environment sharpened, honed, and perfected their skills as predators, as sight-hunters. First and foremost, these fish must see to eat.

In the 200-plus years of our occupation of the land, it is as if we have sought to wholly undo the history of our rivers, that is, to undo the environmental and evolutionary history of our fisheries. How obscenely arrogant to think we can change or deny the history of these fish without undoing their livelihoods. Understand this: these fish must see to eat.

Unfortunately, many of us regard our spring rain, chocolate-colored waters as if they were normal. Admittedly, most of us know nothing else. Topsoil made to flow between river banks is the single most serious environmental contaminant affecting the fisheries of the Midwest. No industrial pollutant even comes close, nowhere close, to producing the level of harm as does water-borne



Wildlife biologist Clark McCreedy hooks a Flatrock River smallmouth bass.

sediment. Newly hatched larval fish are fragile under the best of circumstances; without sight, without the ability to feed, growth slows and the probability of their survival decreases further. A single dramatic rain event may so cloud the water, and persist long enough, that an entire year class of larval sight-feeding fish may be locally decimated. The surveys conducted by our fisheries biologists don't suggest that this *may* happen; these surveys suggest that this *does* happen.

Though we upstart colonists take pride in the public ownership of our natural resources, it needs to be said that, like the founders of our republic, we have yet to decide who ought to pay for the management of our resources. While most of us welcome the idea of public ownership of our natural resources, we seem to stutter to a halt when we begin to blend this with the assertion of private property rights. That is to say, the wealth and health of our publicly held natural resources depends upon the goodwill of private landowners. And that is the question: should the currency of our concern be measured solely in units of goodwill or good intentions? Is goodwill good enough?

Clean rivers and streams remain a vital component of our outdoor recreation experience. They are one of the few remaining places where outdoorsmen and women can reconnect with the wild world.



As a prized sportfish, the smallmouth bass is best described by anglers in one word—spunk. This aggressive fish hits hard on many lures and live baits. Pound-for-pound, it delivers a high-leaping battle when hooked. Smallmouth bass fare best in the clear water of natural lakes, impoundments, rivers and streams.

While many of us would assert that the aesthetic value of our natural resources exceeds their monetary worth, nonetheless, these things, too, have a price. That price is a question of natural resource damage. It is a question of clean drinkable water. It ought to take into account the cost to maintain reservoirs that collect sediments. It ought to include the lost recreational value of our rivers and streams. Soil has a price, and isn't just a question of bushels.

So how do we set a price for the resources we value? A free-market economist might suggest that any property owner who devotes land to conservation ought to be compensated, by those of us who value those resources, at a rate that meets or exceeds the return for competing uses of

the land.

Competitive conservation. Can you imagine what might happen if we earnestly were able to compete, as conservationists, for the land? Indeed, conservation ought to be so economically attractive that it should make no sense to do otherwise. Realistically, we need to compete. It makes no sense for any landowner to divert land to conservation unless there is a certainty of a reasonable return on the investment.

Given the value of our natural resources, the value of our rivers and streams, it makes sense to competitively invest in their conservation. The mechanics of how we pay for conservation isn't nearly as important a question as coming to agreement on the fact that, yes, we ought to pay for it. It makes sense. And, the free-market fact of the matter is that we will get exactly what we pay for, or don't pay for, as the case may be. But, our resources are worth it. They are worth the investment we need to make and our goal should not be to preserve, but rather to improve. Ecologically or economically, this makes perfect sense.

Clark D. McCreedy Ph.D., wildlife biologist, Division of Fish and Wildlife

focus on ***Fish parasites — sucking out the lifeblood***

More than just a fungus among us

Many anglers have started to clean a fish only to observe that something is just not right. They may see tiny black specks scattered throughout the flesh, or perhaps observe yellow “grubs,” or even find a moving worm-like creature in the body cavity. It can seem like a scene in a horror movie. Fish parasites are to blame.

A parasite is an animal that lives in or on another animal, called the host. The host is almost always a different species. The parasite depends on its host for food and can cause some degree of injury to the host, although the injury is not always serious. Many animals, including fish, harbor parasites throughout their life. Fish from Indiana waters can host many kinds of parasites, but only four or five types are commonly observed by anglers.

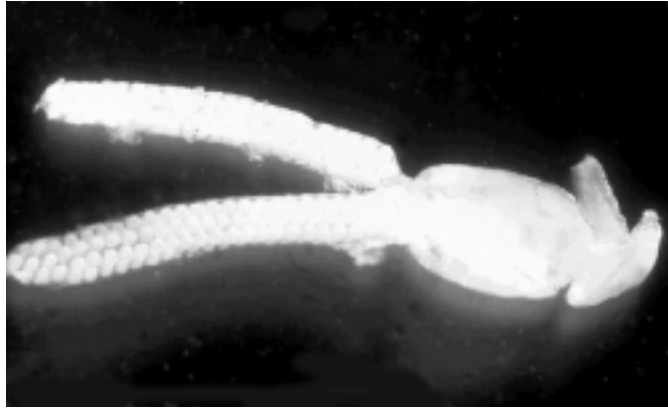
The most commonly observed parasites are black spot, yellow grub, tapeworm, white grub, and anchor worms. The good news is that these parasites cause little damage to the host fish. Other parasites include leeches and even lampreys, as well as a host of round worms, blood flukes and other tiny organisms. Some of these, such as the myxosporean parasite that causes whirling disease, can present very serious problems to fish.

While not technically a parasite, fungus also deserves mention because this white cottony growth is commonly observed on fish. As with parasites, the fish serves as a host for the fungus and is damaged by the organism.

Anchor worm (Copepod)

Anchor worms are small stick-like creatures that attach to the outside of the fish. They may make a red spot or ulcer at the point of attachment. When present, these animals are easy to observe. There are many other ectoparasites (outside parasites) that

attach to the gills or fins and are unlikely to be observed during normal handling.



An anchor worm (with eggs) can be found attached to the outside of many species of fish found in Indiana. A small ulcer or sore is commonly found at the site of the anchor worm attachment.

Black spot (Trematode)

Black spot is often observed in sunfish. The infection can be detected by looking for a large number of small black spots on the skin and in the flesh of the fish. This organism is small, slightly larger than a large flake of pepper, and often remains unnoticed until the first observation, then it seems to be everywhere.

Yellow grub (Trematode)

Yellow grub is also found in the fins and flesh of fish and is easily observed. This parasite looks like a grub. The grubs will move when taken out of the fish. Most anglers find the size and movement of the parasite to be disturbing.

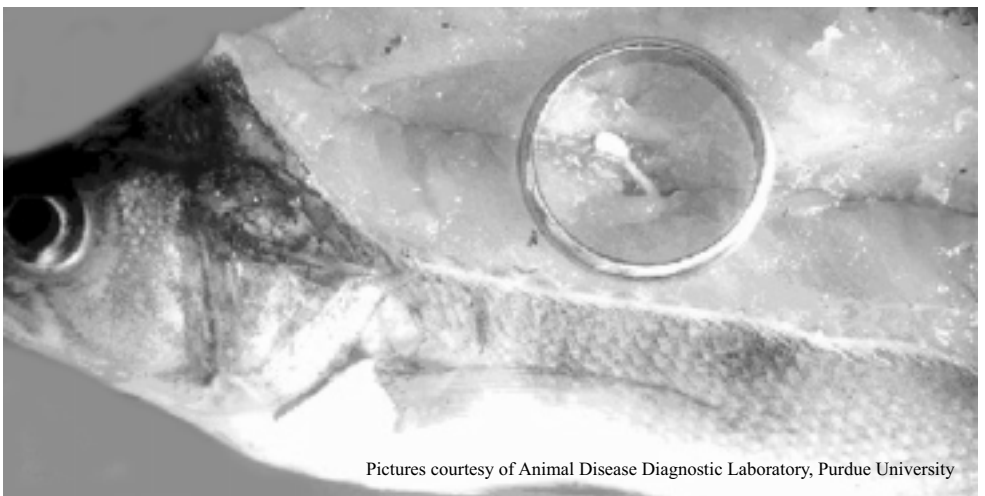
White grub (Trematode)

White grub is often found deep in the flesh or in the internal organs of the fish. The location of this parasite, and its

color, are two easily recognizable differences between white and yellow grubs.

Tapeworms

Tapeworms are not as commonly observed because they inhabit the internal organs of fish. Anglers that fillet fish and discard the carcass may never see this organism. In Indiana, large bass often have tapeworms.



Pictures courtesy of Animal Disease Diagnostic Laboratory, Purdue University

White grubs can occasionally be observed in muscle tissue of several different fish species. Anglers are likely to observe this parasite when cleaning sunfish and black bass.

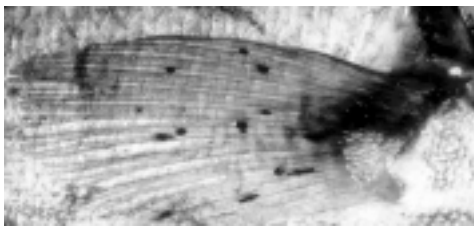
There are a host of other parasites that inhabit the internal organs, but their size and location makes their detection unlikely during routine fish cleaning.

Leeches and lampreys

Leeches and lampreys can be truly unpleasant to observe. Anglers may initially be disturbed to learn of their presence, but quickly grow to accept the relatively low numbers of these animals.

Fungus

Fungus is not a parasite, but it does attach to the host and can cause damage. Fungus is often observed as a white cottony patch surrounding a cut or scrape. This is a stress related infection that often attacks fish during spawning or following other activities that remove the protective slime layer maintained by the fish. Damage to the slime layer, and resulting fungus infection, is one of the main reasons fish should be handled as little as possible, and only with wet hands, when anglers practice catch and release.



Black spot is common throughout Indiana. It does little damage to the fish host, and poses no danger to anglers.

Parasite life cycles

Most parasites have complicated life cycles involving multiple hosts. Many times the host species requirements are very specific. For example, the parasite that causes black spot requires a particular group of fish eating birds as an intermediate host. This trait makes parasites interesting to study and can contribute to control strategies.

Controlling fish parasites

There are no practical and very few effective ways to control parasites in fish that inhabit open waters. Occasionally, recommendations aimed at disrupting a step in the life cycle of the parasite are made. In small lakes and ponds, this almost always means controlling vegetation and improving water quality to limit hiding places or growth conditions for intermediate hosts such as snails.

In general, parasites present very few serious problems in our wild fish populations. They can cause isolated mortality and, in rare cases, substantial mortality can occur. It is much more common for fish to live a perfectly normal life after being infected with a parasite like black spot. These parasites do very little damage to the host species and are basically just catching a ride to the next stage in their life cycle.

What should an angler do with a fish infected with parasites?

Experts agree that parasites can't be transmitted to humans when the fish is properly cleaned and cooked. However, some parasites can infect humans when the fish is improperly cleaned or prepared. Tape worms and some other parasites can cause problems if uncooked internal organs, flesh or heads are fed to dogs or other domestic animals. When cleaning fish, use good kitchen hygiene, promptly cook or preserve the fish, then carefully dispose of any uncooked material to eliminate the danger of parasite contamination.

Hand washing and good personal hygiene should be practiced following handling of any animal that appears sick or diseased.

Remember, the presence of some parasites is normal.

Should fish contaminated with parasites be eaten?

If properly cleaned and thoroughly cooked, fish containing parasites is safe to eat, but it may be unappealing to some. Anglers may consider releasing fish back into the same water where they were caught if they do not wish to clean and eat the fish. The release of the fish may be helpful to the fish population in the pond or lake.

How can I eliminate parasites from my pond?

It is impossible to eliminate all parasites. These organisms exist in virtually all waters. The best approach is to make sure the fish population is healthy, which will allow most of the fish to fight off attacks by parasites.

Favorable fish health factors

- Good water quality is one of the most important factors affecting the health of fish populations.
- Minimize run-off from heavily fertilized fields, lawns or stock yards.
- Prevent livestock from wading in the ponds or streams.
- Treat aquatic vegetation early in the season and maintain control before weeds become a serious problem.
- Diseases may be introduced unintentionally by moving fish from lake to lake.
- If you release fish, release them into the same water where they were caught (moving fish usually requires a permit).

Many parasite populations will cycle up and down in abundance. These natural pond cycles are important to observe, and recognizing them is part of owning and managing a pond.

Gary Armstrong, planning and federal aid, Division of Fish and Wildlife

Last Issue

Focus on Fish & Wildlife will no longer be published. The money-saving effort will save \$.25 per subscriber for printing and mailing costs. *Focus* was distributed to 54,000 households. Information on fish and wildlife conservation and recreation programs will continue to be distributed on the DNR web site and through Wild Bulletin, an e-mail information service. To subscribe to Wild Bulletin, visit the DNR Division of Fish and Wildlife web site at:

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